

# Review of: "Morphomechanics: An Updated View"

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I really enjoyed reading this opinion manuscript despite not being an expert in morphogenesis or embryogenesis. That being said, reading the proposed view from a morphomechanics perspective was informative, with its model approximation to liquid crystal topological defects as the organization center for embryogenesis. This center, along with cell-cell attachments, propagates mechanical and bioelectrical waves that can couple morphogenesis and differentiation. In tissue engineering, my main related background, changing cellular membrane voltage (by electrical stimulation or mechanical means) is known to be a promoter of differentiation and specific genetic expression. Changes in cellular shape and synchronous genetic expression caused by differentiation waves, sensing the cellular membrane voltage (after a mechanical stimulus), is an interesting hypothesis able to be experimentally tested. This would make the cell trigger the transcription of a different set of genes according to the stimulus parameters, something which I found to be supported by the multitude of effects observed in tissue engineering when subjecting the same cell line to different stimulation protocols and systems.

The author states that morphogenesis and cell differentiation can be uncoupled, a largely overlooked point for which there is scarce data. I do appreciate a more deep explanation of how they can be uncoupled and the importance of their uncoupling.